QUALITY ASSURANCE REPORT/QUALITY CONTROL REPORT

AEE/QA/PR/119/2022-23, DATE: 15/11/23		
Name of Work	:	Improvements to roads and drains in various roads of Devinagara, Lottegolahalli and surrounding areas in ward no.12- Kodigehalli Estimated cost 75.00 Lakhs
Job Code	:	012-23-000007
Bill No.& Amount	:	**1st&Final Bill.Rs. 62,53,571.66(Including GST)**
Name of Agency	:	**Sir.Abbu Sambasiva Reddy,**
Type of Test Performed	:	Rebound Hammer test as per IS13311-(2)-1992&Bitumen Content and Gradation test as per Table 500.10 &Table 500.17 MoRTH V Revision.
Materials on which Tests Was Performed	:	1. Precast cover slab(M15) 2. Dense Bituminous Macadam (Grade II) 3. Bituminous Concrete (Grade II)
Officers present during inspection	:	1.Sri. Praveen AE- Ward no 08 2. Sri .K.M.Yadukrishna AEE-Quality Assurance
Project Management Consultants	:	Civil Pro
Observations	:	➢ NDT (Rebound hammer test) and Bitumen content & Gradation test was conducted by Project Management Consultants representative at random locations in presence of AE (Ward No 08), along with AEE QA division. ➢ The Rebound Hammer Test was conducted randomly on Precast cover slab (M15) and also Bitumen content & Gradation Test were conducted for DBM (Grade II), BC (Grade-II). The readings and results are recorded by the PMC consultants. ➢ The readings of Rebound Hammer Test and Bitumen Content & Gradation Test results are tabulated and analysis of test results done by PMC is here by furnished. ➢ The location wise test results are reproduced in the tables shown below.
Test Locations	:	**Location 1**: Lottegollahalli Main Road (Infront of Jalageramma Temple) **Location 2**: Lottegollahalli Main Road (Infront of Creative Child School # 92/C) **Location 3**: Lottegollahalli Main Road (Sri Devi Condiments # 19/19) **Location 4**: Sahakarnagar Indoor Stadium Road (Infront of Stadium) **Location 5**: Sahakarnagar Indoor Stadium Road (Near A blooming Tree) **Location 6**: Sahakar Nagar Indoor Stadium Road, Infront of Gate

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು 15/11/23
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
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Table-01: Bitumen Content and gradation Test Results BC- (GRADE-II)

Location 1: Lottegollahalli Main Road (Infront of Jalageramma Temple) (BC 41mm) Location 2: Lottegollahalli Main Road (Infront of Creative Child School # 92/C) (BC 42mm) Location 3: Lottegollahalli Main Road (Sri Devi Condiments # 19/19) (BC 40mm)			
Description	**Trial 1**	**Trail 2**	**Trail 3**
1.Initial weight of sample (gms) w1	317	322	313
2. final weight of sample after extraction (gms) w2	301.5	306.5	298
3. Initial weight of filter paper (gms) w3	4	4	4
4. Final weight of filter paper (gms) w4	6	6	6
5.Increased weight of filter paper (gms) w5=(w4-w3)	2	2	2
6. Weight of Bitumen Extracted (gms). w6=w1-w2+w5	17.5	17.5	17
7. Bitumen content in % (w6/w1)x100	5.52	5.43	5.43
8.Average	5.46		

SIEVE SIZE mm	Trail 1				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0.0	100.0	100
13.2	10	10	3.3	96.7	90-100
9.5	40	50	16.6	83.4	70-88
4.75	75	125	41.5	58.5	53-71
2.36	41	166	55.1	44.9	42-58
1.18	22	188	62.4	37.6	34-48
0.6	26	214	71.0	29.0	26-38
0.3	15	229	76.0	24.0	18-28
0.15	23.5	252.5	83.7	16.3	12-20
0.075	32	284.5	94.4	5.6	4-10
SIEVE SIZE mm	Trail 2				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0.0	100.0	100
13.2	9	9	2.9	97.1	90-100
9.5	46	55	17.9	82.1	70-88
4.75	71	126	41.1	58.9	53-71
2.36	38	164	53.5	46.5	42-58
1.18	18	182	59.4	40.6	34-48
0.6	16	198	64.6	35.4	26-38
0.3	30	228	74.4	25.6	18-28
0.15	26	254	82.9	17.1	12-20
0.075	34.5	288.5	94.1	5.9	4-10
SIEVE SIZE mm	Trail 3				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0.0	100.0	100
13.2	11	11	3.7	96.3	90-100
9.5	40	51	17.1	82.9	70-88
4.75	76	127	42.6	57.4	53-71
2.36	41	168	56.4	43.6	42-58
1.18	20	188	63.1	36.9	34-48
0.6	11	199	66.8	33.2	26-38
0.3	26	225	75.5	24.5	18-28
0.15	25	250	83.9	16.1	12-20
0.075	28	278	93.3	6.7	4-10

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Table-02: Bitumen Content and gradation Test Results DBM- (GRADE-II)

Location 4: Sahakarnagar Indoor Stadium Road (Infront of Stadium) (DBM 51mm) Location 5: Sahakarnagar Indoor Stadium Road (Near A blooming Tree) (DBM 53mm)		
Description	**Trial 1**	**Trail 2**
1.Initial weight of sample (gms) w1	341	348
2. final weight of sample after extraction (gms) w2	327	334
3. Initial weight of filter paper (gms) w3	4	4
4. Final weight of filter paper (gms) w4	6	6
5.Increased weight of filter paper (gms) w5=(w4-w3)	2	2
6. Weight of Bitumen Extracted (gms). w6=w1-w2+w5	16	16
7. Bitumen content in % (w6/w1)x100	4.69	4.60
8.Average	4.64	

SIEVE SIZE mm	Trail 1				Requirement as per MORTH table 500.10
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	Cumulative% Passing	
37.5	0	0	0.0	100.0	100
26.5	10	10	3.1	96.9	90 - 100
19	49	59	18.0	82.0	71 - 95
13.2	51	110	33.6	66.4	56 - 80
4.75	85	195	59.6	40.4	38 - 54
2.360	31	226	69.1	30.9	28 - 42
0.300	38	264	80.7	19.3	7 - 21
0.075	41	305	93.3	6.7	2 - 8
SIEVE SIZE mm	Trail 2				Requirement as per MORTH table 500.10
	Weight Retained, gm	Cumulative Weight Retained	Cumulative %Retained	Cumulative% Passing	
37.5	0	0	0.0	100.0	100
26.5	15	15	4.5	95.5	90 - 100
19	45	60	18.0	82.0	71 - 95
13.2	25	85	25.4	74.6	56 - 80
4.75	91	176	52.7	47.3	38 - 54
2.360	41	217	65.0	35.0	28 - 42
0.300	59	276	82.6	17.4	7 - 21
0.075	35	311	93.1	6.9	2 - 8

Table-03: Bitumen Content and gradation Test Results BC- (GRADE-II)

Location 4: Sahakarnagar Indoor Stadium Road (Infront of Stadium) (BC 41mm) Location 5: Sahakarnagar Indoor Stadium Road (Near A blooming Tree) (BC 43mm)		
Description	**Trial 1**	**Trail 2**
1.Initial weight of sample (gms) w1	320	327
2. final weight of sample after extraction (gms) w2	304.5	311
3. Initial weight of filter paper (gms) w3	4	4
4. Final weight of filter paper (gms) w4	6	6
5.Increased weight of filter paper (gms) w5=(w4-w3)	2	2
6. Weight of Bitumen Extracted (gms). w6=w1-w2+w5	17.5	18
7. Bitumen content in % (w6/w1)x100	5.47	5.50
8.Average	5.49	

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SIEVE SIZE mm	Trail 1				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0.0	100.0	100
13.2	11	11	3.6	96.4	90-100
9.5	43	54	17.7	82.3	70-88
4.75	68	122	40.1	59.9	53-71
2.36	37	159	52.2	47.8	42-58
1.18	20	179	58.8	41.2	34-48
0.6	17	196	64.4	35.6	26-38
0.3	34	230	75.5	24.5	18-28
0.15	31	261	85.7	14.3	12-20
0.075	27.5	288.5	94.7	5.3	4-10
SIEVE SIZE mm	Trail 2				Requirement as per MORTH table 500.17
	Weight Retained, gm	Cumulative Weight Retained	%Cumulative Retained	% Passing	
19.00	0	0	0.0	100.0	100
13.2	7	7	2.3	97.7	90-100
9.5	40	47	15.1	84.9	70-88
4.75	69	116	37.3	62.7	53-71
2.36	38	154	49.5	50.5	42-58
1.18	22	176	56.6	43.4	34-48
0.6	19	195	62.7	37.3	26-38
0.3	38	233	74.9	25.1	18-28
0.15	31	264	84.9	15.1	12-20
0.075	29	293	94.2	5.8	4-10

Table-04: Rebound Hammer Test Results for

Sl No	Member	Rebound Hammer Number	Average Reading	Compressive Strength (N/mm2)	Impact Direction
Location 6: Sahakar Nagar Indoor Stadium Road, Infront of Gate					
1	Precast Cover Slab (M15)	22	25	22	Vertical Down
2		28			
3		25			
4		26			
5		22			
6		28			

Conclusion:

The file containing **1st&Final bill** has been submitted for the above work to QA department on **03.11.2023** requesting for spot inspection. Engineers of QA/QC division have visited the work spot on **10.11.2023**

PMC team was instructed to assess the strength of concrete used Precast cover Slab (M20) by Rebound Hammer Test and also Gradation & Bitumen content test for DBM (Grade II), BC (Grade-II) on Asphalted road . The Rebound hammer test and Bitumen Content and Gradation Tests were conducted by PMC in presence of engineer in charge of work.

From the test results furnished by PMC, it is concluded that the results of the samples collected are in accordance with the standards/ specifications mention in the IRC codes. However, the results submitted by the PMC have been reproduced here with for further needful action. The results checked by QA/QC relates only for item tested in the particular location randomly.

K.M. Halli 13/11/23

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ಗುಣಭರವಸೆ/ಗುಣಮಟ್ಟ ನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ -
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Engineer in charge of work shall ensure that work executed as per this bill is not claimed in any other bill /work or else Engineer in charge of work shall be held responsible.

Further, QA/QC directs the Engineer in-charge of the work that all materials used for the work shall be inspected, tested and accepted as per the relevant specifications before incorporation in the work. The frequencies and methods of sampling and testing materials, including those required for definite purpose and not covered by MORT&H specifications shall be in accordance to the relevant IRC or BIS or AASHTO/ASTM/BS standards in order of priority.

All materials or work not conforming to the requirements of the specifications shall be considered unacceptable and rejected. The unacceptable materials or works that are rejected shall be immediately removed unless the defects are corrected and approved by the engineer in-charge of work.

The concerned Engineer in charge of the work shall follow the direction issued by Chief Commissioner Letter number dated 01.08.2022 and 14.09.2022 and take necessary action as appropriate in accordance with the law.

Note: -

This report by QA/QC is pertaining to the work carried out in **1st&Final bill** only.

Safety precautions shall be taken at work spot to prevent any mishap, injuries or loss of life to general public and construction workers according to guidelines laid down in code of practices.

Engineer in charge of work and Agency shall ensure that if any damages or defects occur pertaining to the executed work within the Defect Liability period (DLP), The same shall be rectified immediately on top priority without fail.

Engineer in charge of work shall ensure that any changes/ modification/change in location in the sanctioned estimate to be got approved by competent

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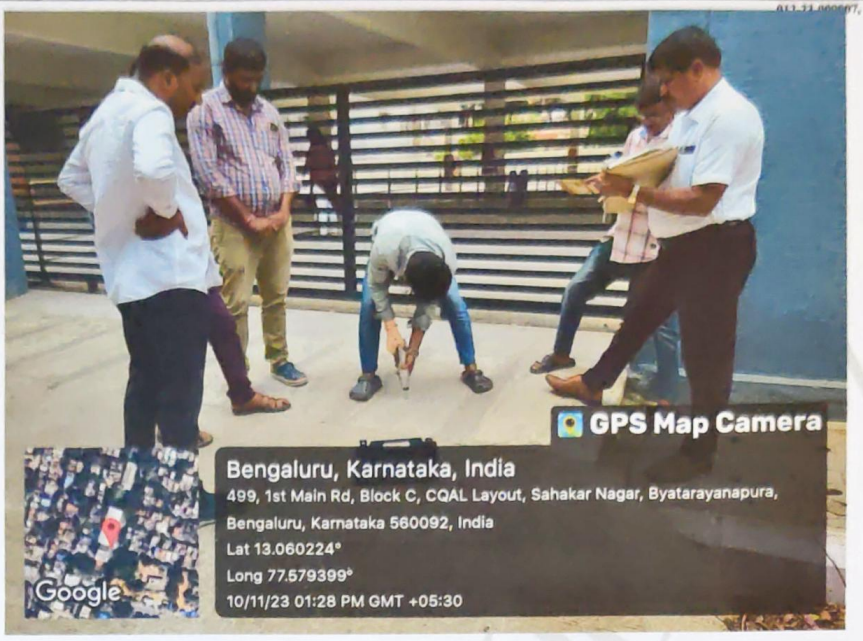

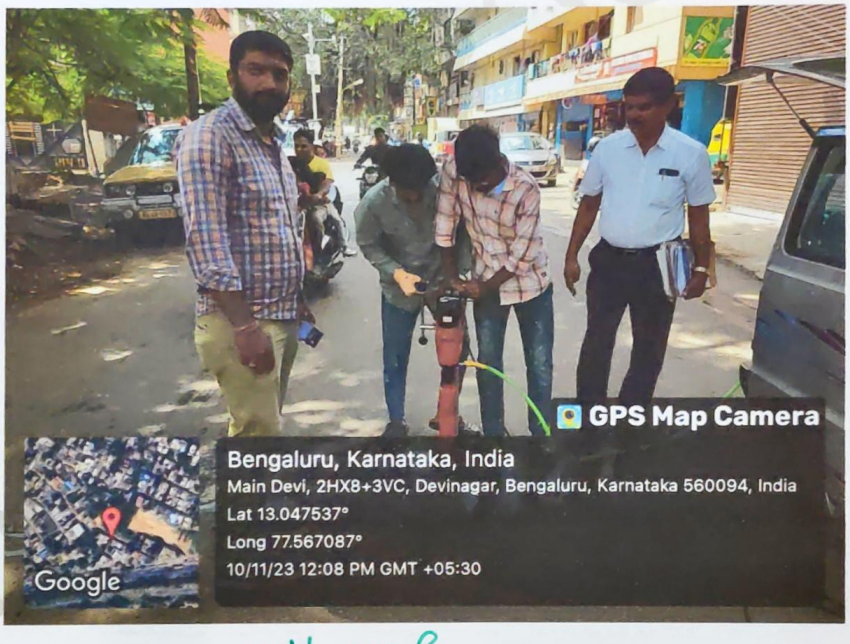

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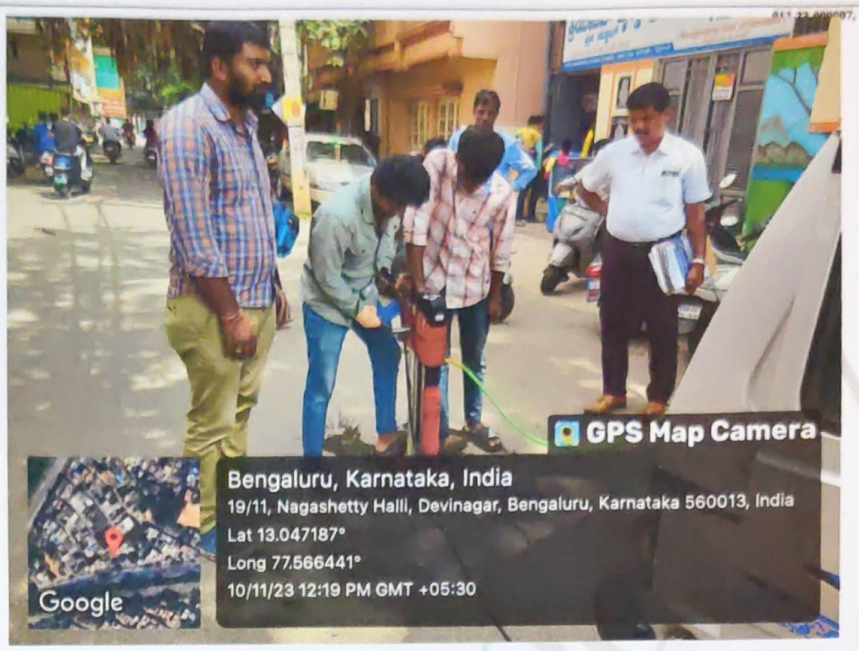

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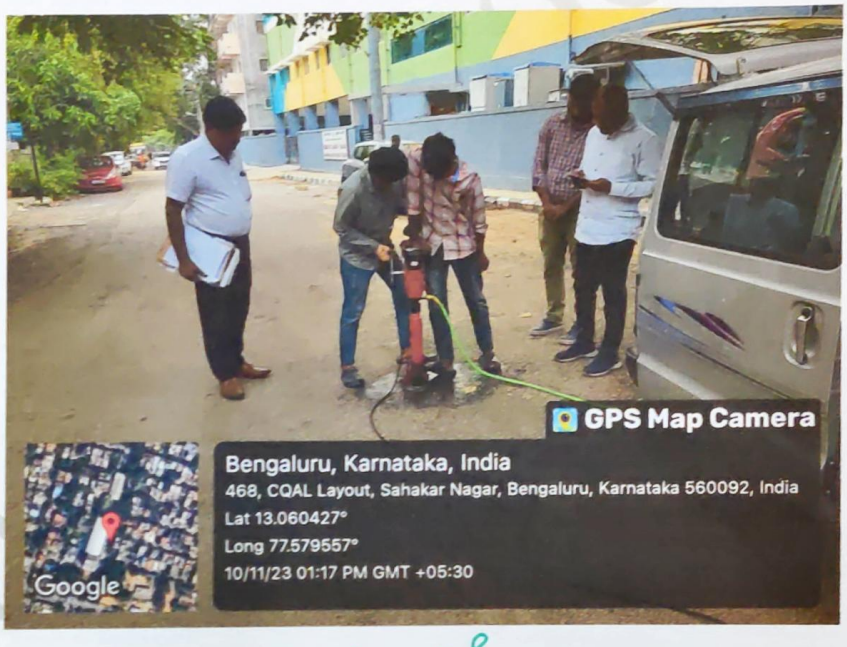

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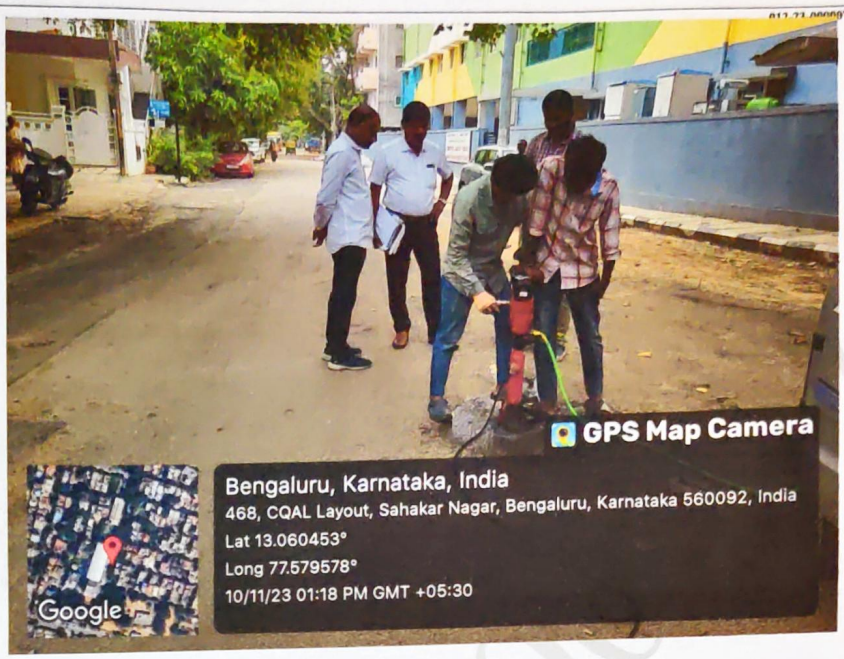

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